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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,128	05/19/2006	Michael Holzemer	LYBZ 200104US01	9229

27885 7590 04/16/2010

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EXAMINER	
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ART UNIT	PAPER NUMBER
3746	

MAIL DATE	DELIVERY MODE
04/16/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/580,128	HOLZEMER ET AL.	
	Examiner	Art Unit	
	DNYANESH KASTURE	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 March 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 19 March 2010 has been entered.

Claim Objections

2. In Re Claim 1, there should be a comma after “determining from the curve” for proper interpretation.

3. In Re Claim 12, there should be a comma after the phrase "alteration range" for proper interpretation. The following language is suggested after "claim 3,": -- wherein in the alteration range, each value of decreasing inlet pressure p is associated with a corresponding value of decreasing speed n_v --.

4. In Re Claims 17 and 18, the symbols p_x and n_x are not supported by the original specification. It is suggested that these symbols be changed to p and n_v respectively. Further in Claim 17, there needs to be a comma after “pressure p and the drive speed n” for proper interpretation.

5. As a general observation, it is not clear what the difference is between “n” and “n_v”. “n_v” appears to refer to the range of speeds between n1 and n2, yet “n_v”

is often used to indicate a speed value between n1 and n2. It is suggested that all occurrences of "n_v" in the claims be changed to "n". Note that applicant has not used a "p_v" symbol to indicate values between p1 and p2, therefore changing all occurrences of "n_v" in the claims to "n" would generate consistency.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1-16 and 19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

8. In Re Claims 1 and 3, the phrase "continuously determining the inlet pressure value p" is not supported by the specification. The phrase "approximately continuously" on page 2 of applicant's specification relates only to the upper range of inlet pressure values, and not necessarily the lower range and alteration range of inlet pressure values, as suggested by the following disclosure: "While at high inlet pressure values p above the upper limit value p1 the drive motor is operated at a maximum constant speed n1, a corresponding speed value nv is approximately continuously associated for speeds above the upper limit value p1 in dependence on the inlet pressure value p". For the same

reasons, the phrase “continuously determined” in Claim 10 and the phrases “continuously senses”/”continuously adjusts” in Claim 19 are not supported by the specification.

9. It is suggested that removal of the word “continuously” from the phrase "continuously determining the inlet pressure value p" in Claims 1 and 3 would overcome the new matter rejections for Claims 1-9 and Claims 12-15.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 10-11, 16 and 18 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. In Re Claims 10, the phrase “at least one of” is followed by alternatives to "upper speed value” and “lower speed value” without first stating that the curve comprises an upper speed value and a lower speed value to be consistent with Lines 14-15 of the claim. For example when only "upper speed value” of alternative (a) is present, the statement that the upper speed value n1 is greater than the lower speed value n2 would be indefinite because the “lower speed value” of alternative (b) would not be present. Further, the alteration range paragraph should be moved to before "at least one of" because it appears to be included in both alternatives.

13. Similar arguments apply to Claim 18 with reference to “at least one of”.

14. As a side note in claim 10, the word "for" in the phrases "for controlling a speed" and "for storing a continuous curve" initiates an intended use recitation that does not structurally limit the claims. It is suggested that the phrases be changed to – that controls a speed – and – that stores a continuous curve --.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claims 10, 11 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ando (US Patent 6,375,431 B1) in view of Sabini et al (PG Pub US 20010041139 A1)

17. In Re Claim 10, with reference to Figures 1 and 4, Ando discloses a positive displacement vacuum pump ("B") comprising a drive motor (173), an inlet pressure sensor (inherent from pressure measurements at suction port that generate the data in Figure 7) and a drive motor control that is implied from the following disclosure in Column 7, Lines 16-29: "In the evacuating apparatus of this invention, a driving motor for each of the booster screw vacuum pump and the roughing screw vacuum pump is rotated at as high a rotating speed as

possible as far as the motor is not overloaded, to shorten the exhaust time, in a range where the suction side pressure of the booster screw vacuum pump is relatively high. When the suction side pressure of the booster screw vacuum pump has reached the ultimate pressure or BECOME A RELATIVELY LOW PRESSURE, the rotating speed of the driving motor for the booster screw vacuum pump is REDUCED to the lowest rotating speed to maintain a degree of vacuum required for the evacuated chamber, and the rotating speed of the driving motor for the roughing screw vacuum pump is reduced to as low a rotating speed as possible ..". The drive motor control operates on a continuous curve of pressure versus speed in an upper range, alteration range and lower range as follows:

- an upper range: "a driving motor for the booster screw vacuum pump and the roughing screw vacuum pump is rotated at AS HIGH A ROTATING SPEED AS POSSIBLE"; the "as high rotating speed as possible" corresponds to applicant's n1
- an alteration range: "when the suction side pressure of the booster screw pump has .. .. BECOME A RELATIVELY LOW PRESSURE .. .. the rotating speed of the driving motor of the roughing screw vacuum pump is REDUCED TO AS LOW A ROTATING SPEED AS POSSIBLE"; the "relatively low pressure" corresponds to applicant's p1, the "as low a rotating speed as possible" corresponds to n2; note that as long as the motor is running the pressure will continue to drop, the motor takes time to reduce speed from n1 to n2 because of the inertia of the motor (will not be an abrupt drop), in the time that it takes the

motor to reduce from n1 to n2, the pressure will have reduced from p1 to p2 (the pressure will continue to drop since the motor is running)

- a lower range: represented by the time it takes for the pressure to drop from p2 down to ultimate pressure after the motor speed is reduced to its "lowest possible"; the speed is maintained at its lowest possible as the pressure approaches ultimate pressure

18. However, Ando does not disclose a storage that stores a curve which indicates a respective speed n of the drive motor for each inlet pressure value p as the pressure continuously drops.

19. Nevertheless, with reference to Figure 1, Sabini et al discloses pump (40) comprising a drive motor (30), an inlet pressure sensor (1), a drive motor control (10) that controls the speed of the motor (Paragraph [0029]: ".. alter the current motor speed ..") in dependence at least partly on the readings from the inlet pressure sensor that indicates inlet pressure value p

- the drive motor control comprises a storage that is capable of storing a continuous curve (for high sampling rates) which indicates a respective speed n for each inlet pressure p as suggested in the abstract: "The controller comprises a storage device for storing data indicative of at least one operating condition .." where speed and pressure are operating parameters and the controller is capable of "storing data values and tables associated with pump OPERATING conditions and PARAMETERS" (Paragraph [0029). Paragraph [0029] also states: "The controller comprises a processor 12 such as a microprocessor operative to perform software functions which UTILIZE THE SENSOR SIGNALS

or sensor data obtained from each of the pump sensors TO DETERMINE THE PUMP OPERATING CONDITIONS"

20. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the pump configuration of Ando to incorporate sensors that measure speed and inlet pressure, and a controller that stores the sensor readings during operation as taught by Sabini et al for the purpose of detecting an abnormal operating condition if one exists as suggested in Paragraph [0029] of Sabini et al: ".. the software functions to generate an alarm condition associated with a particular operating parameter ..". The modified Ando device is capable of measuring and storing pressure and speed readings as the pressure drops first across the upper range, then the alteration range and then the lower range until ultimate pressure is reached.

21. In Re Claim 11, Sabini et al discloses a processor (12) as claimed.

22. In Re Claim 16, Ando discloses a high vacuum pump ("A") as claimed.

23. In Re Claim 17, Sabini et al discloses a memory (RAM) in Paragraph [0029] which stores the drive speed n and pressure p. The drive motor control of Sabini et al is capable of receiving measurements from the sensor, retrieving a corresponding speed, and controlling the drive motor at the retrieved speed. Ando modified by Sabini et al as applied to Claim 10 discloses all the claimed limitations.

24. In Re Claim 18, Ando discloses the upper range, alteration range and lower range as discussed in Claim 10. The pump down from atmospheric pressure to ultimate pressure in Ando is along the curve as claimed.

25. In Re Claim 19, the inlet pressure sensor of Sabini et al senses the inlet pressure and controller sends a correction signal to alter the motor drive speed.

26. In Re Claim 20, the pressure during the pump down process of Ando is continuously falling, therefore the relationship between the inlet pressure and drive speed is a continuous curve.

27. Alternatively, Claims 10, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barnitz et al (US Patent 5,795,328 A) in view of Sabini et al (PG Pub US 20010041139 A1)

28. In Re Claim 17, Barnitz et al discloses a drive motor control (36), a drive motor (16) capable of an adjustable drive speed (Column 4, Line 57), a positive displacement type (Column 5, Line29: “pump 14 is a rotary vane pump” which is well known as a type of positive displacement pump – also as acknowledged in applicant’s disclosure) vacuum pump (14), comprising:

- inlet pressure sensor (22) that determines the inlet pressure p through pressure signals in the inlet line (12)
- a pre-selected relationship between inlet pressure and drive speed in an alteration range (100 mm – 500 mm) where the motor control senses inlet pressure and controls the speed of motor to arrive at the desired pressure as stated in Column 4, Lines 56-58: ".. between 100 and 500 mm. of mercury--valve 34 is closed and the speed of pump 14 is varied to adjust the pressure in the vacuum line to the desired value"

29. However, Barnitz et al does not disclose a memory which stores the pre-selected relationship.

30. Nevertheless, with reference to Figure 1, Sabini et al discloses pump (40) comprising a drive motor (30), an inlet pressure sensor (1), a drive motor control (10) that controls the speed of the motor (Paragraph [0029]: ".. alter the current motor speed ..") in dependence at least partly on the readings from the inlet pressure sensor that indicates inlet pressure value p

- the drive motor control comprises a storage that is capable of storing a continuous curve (for high sampling rates) which indicates a respective speed n for each inlet pressure p as suggested in the abstract: "The controller comprises a storage device for storing data indicative of at least one operating condition .." where speed and pressure are operating parameters and the controller is capable of "storing data values and tables associated with pump OPERATING conditions and PARAMETERS" (Paragraph [0029). Paragraph [0029] also states: "The controller comprises a processor 12 such as a microprocessor

operative to perform software functions which UTILIZE THE SENSOR SIGNALS or sensor data obtained from each of the pump sensors TO DETERMINE THE PUMP OPERATING CONDITIONS"

31. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the pump configuration of Barnitz et al to incorporate sensors that measure speed and inlet pressure, and a controller that stores the sensor readings during operation as taught by Sabini et al for the purpose of detecting an abnormal operating condition if one exists as suggested in Paragraph [0029] of Sabini et al: ".. the software functions to generate an alarm condition associated with a particular operating parameter ..". The modified Barnitz et al device is capable of measuring and storing pressure and speed readings as the pressure is controlled to the desired value.

32. In Re Claim 10, Barnitz et al discloses a drive motor control (36), a drive motor (16) capable of an adjustable drive speed (Column 4, Line 57), a positive displacement type (Column 5, Line29: "pump 14 is a rotary vane pump" which is well known as a type of positive displacement pump – also as acknowledged in applicant's disclosure) vacuum pump (14), comprising:

- inlet pressure sensor (22) that determines the inlet pressure p through pressure signals in the inlet line (12)
- the drive motor control controls speed of the drive motor in dependence on the inlet pressure determined by the inlet pressure sensor as suggested in c:

".. between 100 and 500 mm. of mercury--valve 34 is closed and the speed of pump 14 is varied to adjust the pressure in the vacuum line to the desired value"

- an upper range for inlet pressure where the motor is run at maximum speed: at startup the pump is operated at maximum capacity (Column 5, Line 37) until the pressure drops sufficiently to enter the alteration range
- an alteration range, when the motor switches from maximum capacity to varying the speed "to adjust the pressure in the vacuum line to the desired value" (to adjust the pressure in the vacuum line to the desired value); the desired pressure values in the alteration range (100mm - 500mm) clearly do not require full capacity therefore the controller would have to reduce speed to a value sufficient to sustain the desired pressure (between 100mm and 500mm); 100mm corresponds to applicant's p1, the speed at maximum capacity corresponds to applicant's n1, the speed sufficient to sustain the desired pressure corresponds to applicant's n2; and the desired pressure corresponds to applicant's p2

33. However, Barnitz et al does not disclose a storage which stores a continuous curve which indicates speed for each inlet pressure.

34. Nevertheless, with reference to Figure 1, Sabini et al discloses pump (40) comprising a drive motor (30), an inlet pressure sensor (1), a drive motor control (10) that controls the speed of the motor (Paragraph [0029]: ".. alter the current motor speed ..") in dependence at least partly on the readings from the inlet pressure sensor that indicates inlet pressure value p

- the drive motor control comprises a storage that is capable of storing a continuous curve (for high sampling rates) which indicates a respective speed n

for each inlet pressure p as suggested in the abstract: “The controller comprises a storage device for storing data indicative of at least one operating condition ..” where speed and pressure are operating parameters and the controller is capable of “storing data values and tables associated with pump OPERATING conditions and PARAMETERS” (Paragraph [0029). Paragraph [0029] also states: “The controller comprises a processor 12 such as a microprocessor operative to perform software functions which UTILIZE THE SENSOR SIGNALS or sensor data obtained from each of the pump sensors TO DETERMINE THE PUMP OPERATING CONDITIONS”

35. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the pump configuration of Barnitz et al to incorporate sensors that measure speed and inlet pressure, and a controller that stores the sensor readings during operation as taught by Sabini et al for the purpose of detecting an abnormal operating condition if one exists as suggested in Paragraph [0029] of Sabini et al: ".. the software functions to generate an alarm condition associated with a particular operating parameter ..". The modified Barnitz et al device is capable of storing pressure and speed readings that the controller can use to control the pressure to the desired value.

36. In Re Claim 18, Barnitz et al and Sabini et al as applied to Claims 10 and 17 disclose all the claimed limitations.

Allowable Subject Matter

37. Claims 1-9 and 12-15 would be allowable if amended to overcome objections & the rejection(s) under 35 U.S.C. 112, 1st paragraph, set forth in this Office action. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not disclose the method steps of: determining the inlet pressure value p, determining from the curve, the speed n associated with the determined inlet pressure value p in the curve and operating the drive motor at the determined speed n, the determined speed value being less than or equal to the upper speed value n1 (Claim 1)/ the speed n being equal to or greater than the lower speed value n2 (Claim 3).

Response to Arguments

38. Applicant's arguments with respect to all the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

39. If the word “continuously” was removed from the phrase "continuously determining the inlet pressure value p" in Claim 1 and Claim 3, it would overcome the new matter rejections for Claims 1-9 and Claims 12-15.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DNYANESH KASTURE whose telephone number is (571)270-3928. The examiner can normally be reached on Mon-Fri, 9:00 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272 - 7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art Unit 3746

DGK